Selection of Sustainable Performance Strategies in Cosmetics SMIs Using Lean and Green Balance Scorecards Methods

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ABSTRACT

Cosmetics SMI is experiencing problems assessing its business performance in the face of demands for sustainable industry transparency. They only assess their performance based on operation and financial aspects and pay less attention to environmental and social criteria. This research was conducted to assist the owner-manager of cosmetics SMI in designing criteria for measuring the performance of a sustainable SMI comprehensively and determining the right strategy to improve performance. The research team combined the Balanced Scorecards (BSC) method with four perspectives and performance indicators for lean and green manufacturing to support a sustainable SMI. That combination produces 18 lean and green criteria arranged from financial, customer, internal process, and growth and learning. Then, researchers prioritize these 18 criteria with the analytical hierarchy process (AHP) technique. The weighting results show that the financial criteria have the highest weight of 35.2% and the growth and learning criteria have the lowest weight of 13.7%. The weighting calculation has a consistency value of 0.01. Researchers recommend four strategies that can improve the criteria' performance based on weighting assessments at the sub-criteria level. The four strategies can accelerate the achievement of sustainable Cosmetics SMI.

Keyword: sustainability; lean and green; balanced scorecards (BSC); analytical hierarchy process (AHP); cosmetics SMI

INTRODUCTION

Cosmetics is a leading industry that started taking off in the millennial year. The spread of the coronavirus and its determination as a pandemic have also impacted the global cosmetics business. Euromonitor International predicts that this impact will last from 2020 to 2024. FIGURE 1 shows a 2% decrease in total sales of cosmetics (in units) in 2020 and is expected to increase again in 2021 due to increased demand for personal or personal care products [1]. Asia Pacific countries are declared as cosmetic, industrial areas with bright spots in 2021-2024 because they are systematically better at dealing with the coronavirus pandemic. The Asia Pacific dominates 55% of world cosmetic sales, followed by Latin America with 12%, Middle East and Africa 11%. Although the Asia Pacific has predicted a positive sales trend, there is a change in society's cosmetic products' needs.

FIGURE 1: World Cosmetics Sales Trend 2021-2024
Source: [1]

Society redefines their need for health by shifting to the basic principles of self-health free from disease. People not only make sustainability a cosmetic trend, but they set sustainability as a life goal. They place everything not only from a profit perspective - but also on environmental and social responsibility. Sustainability in cosmetic customers' eyes is manifested in the transparency of business performance from the point of view of cosmetic products' safety, from the raw material content - the manufacturing process - to the delivery to the customer's door. Companies engaged in the cosmetics industry, including SMI, must answer the need for sustainability through transparency in measuring sustainability performance indicators. Unfortunately, Cosmetics SMI has limited resources and capabilities.

Owner managers, as decision-makers at Cosmetics SMI, find it challenging to carry out continuous performance appraisals. So far, they have only assessed financial performance, which is oriented towards achieving short-term profits. To help achieve a sustainable assessment at SMI Cosmetics, the research team applied the Lean and Green Balance Scorecards method to assess companies holistically. Balanced Scorecards (BSC) are performance management tools that allow organizations to translate their corporate vision and strategy into implementation seen from four perspectives [2]. The four perspectives are financial, internal business, customer, and learning and growth perspectives. At the same time, Lean and Green is a concept that ensures the creation of a sustainable business

by eliminating all types of waste that occur. Previous research has produced 17 sustainable factors for SMI Cosmetics related to the manufacturing, financial, environmental and social dimensions [3]. However, this research has not yet produced a measurable performance appraisal framework ready to be applied to SMI Cosmetics. This study will further explore the detailed scorecards used to measure sustainability performance as a reference for SMI Cosmetics. Researchers will also provide recommendations for strategies that can increase the performance value of SMI Cosmetics in the long term.

LITERATURE REVIEW

Sustainable industrial performance includes factors related to operational, economic, environmental and social dimensions. The operational and economic dimensions represent the outcome of the lean manufacturing concept. Meanwhile, the environmental and social dimensions are the focus of the green manufacturing concept. The operational dimension indicators are production resources, waste, productivity ratios, and quality ratios in the lean manufacturing concept. Simultaneously, the economic dimension includes metrics of production costs, company profits, and government revenue). In the green manufacturing concept, the environmental dimension can be measured from water, air and soil pollution, and the consumption of toxic chemicals). Meanwhile, the social dimension includes indicators of welfare, salary and benefits, and health of human resources). The four sustainability dimensions with lean and green indicators can be combined with measuring balanced scorecards' performance (BSC).

The critical role of the BSC is to align organizational strategy with performance, translating strategy into action [4]. A business needs to set clear strategic objectives in four perspectives: the desired financial performance, customer description, internal processes within the company, and employee competencies [5]. The customer perspective focuses on what the customer thinks about the company and how it wants its customers to see it [4]. Performance measures for this perspective include customer service, responding to customer requests quickly and confidently, and quality and performance. The internal business process perspective focuses on how well the business is running and the activities the organization carries out to satisfy customers, shareholders, surrounding communities, and the government. The financial performance perspective includes the profitability and cost-effectiveness of a strategy that will enable the organization to evaluate and measure its results [6].

Meanwhile, the learning and growth perspective includes employees' ability, skill level, employee satisfaction, and retention. The combination of mapping indicators for lean and green balanced scorecards is prepared in the framework of the sustainability performance of SMI Cosmetics.

Analytical Hierarchy Process (AHP) is a decision-making technique that can weigh lean and green BSC indicators.

AHP uses a questionnaire that is distributed to experts as a reference in making decisions. The measurement scale used in AHP uses the Saaty scale in the order of 1-9. A score of 1 indicates that the two elements are equally essential and increase in importance from the odd to absolute most important score at 9. While the scores 2,4,6, and 8 indicate the scores between two adjacent odd score considerations.

METHODS

The object of this research is SMI Cosmetics which is located in Indonesia, West Java. Researchers used the focus group discussion (FGD) method and literature studies to determine the sustainability performance scorecards. FGD is a qualitative research method appropriate to formulate a concept from several expert perspectives [7]. This research involved 5 SMI cosmetic experts who have more than 25 years of experience and are actively involved in the cosmetics entrepreneur association at the national level. Furthermore, the researchers weighted the performance scorecards through a questionnaire that was distributed to the five experts. The questionnaire's answers were processed with the Super Decision application's help based on the AHP method. The research steps are summarized in FIGURE 2.

FIGURE 2: Research Steps

RESULT AND DISCUSSION
Factor Identification

Based on literature studies and expert interviews, the researchers formulated L&G BSC to achieve a sustainable Cosmetic SMI, as shown in TABLE 1. This study considers four indicators: internal process, financial aspects, customer focus, and growth and learning, which break down into eighteen primary sub-indicators related to lean and green measurement. The internal process criteria are divided into six strategies related to lean and green indicators. The financial criteria consist of five strategies that can increase the stability of corporate profits and government revenues. Customer criteria include two strategies that represent customer needs. Furthermore, the growth and learning criteria include five strategies that show how SMI can develop sustainably in the future.

TABLE 1: Lean and Green Balance Scorecard (L&G BSC) Model

Perspectives	Strategic Objectives	Code	Indicators	References
Internal Process	*Production Facility:* Availability of production facilities and equipment following regulations	*S1-1*	*Facility Utilization*	[8]
Internal Process	*Quality Improvement:* Quality improvement activities throughout the production process	*S1-2*	*Defect Ratio*	[9], [10]

Perspectives	Strategic Objectives	Code	Indicators	References
Internal Process	*Productivity Control:* Production control that ensures the value of output is more significant than the input	*S1-4*	*Productivity Ratio*	[9], [10]
Internal Process	*Environmental Impact:* Reduce the contamination from solid, liquid, and low hazardous waste.	*S1-5*	*Liquid Waste to Target Achievement Ratio*	[12]
Internal Process	*Green Brand Certification:* Green product certification obtained by all cosmetic variants produced	*S1-6*	*The existence of Green Brand Certification*	[10]
Financial	*Manufacturing Cost:* Minimum expenses through waste elimination and productivity improvement	*S2-1*	*Cost Reduction Achievement Ratio*	[13], [14]
Financial	*Sales revenue:* Increase in income through creative marketing programs	*S2-2*	*Sales Increase Ratio*	[13], [14]
Financial	*Company profitability:* Achieving profit targets through simultaneous activities from various lines.	*S2-3*	*Profitability Ratio*	[13], [14]
Financial	*Tax Paid:* Zero tax penalties.	*S2-4*	*Tax issue*	[15]
Financial	*Government Subsidies:* Get capital assistance from the government.	*S2-5*	*Government Funding for R&D*	[16]
Customer	*Customer Satisfaction:* e-commerce programs that can increase customer satisfaction	*S3-1*	*Claim Rate*	[9], [10]
Customer	*Product Design/Formulation:* Safe and environmentally friendly material formulation	*S3-2*	*Number of product approved and registered by the government*	[17]
Growth and Learning	*Emission/Residual Reduction Program:* Company activities to reduce emissions	*S4-1*	*Number of Emission Reduction Program*	[18]
Growth and Learning	*HR Health and Safety:* Health and safety improvement programs in collaboration with government agencies and local health centres	*S4-2*	*Number of Working Accident*	[10]
Growth and Learning	*HR Wealth:* Providing incentives and fulfilling the average income of cosmetic workers according to regional minimum wages	*S4-3*	*The ratio of Average HR Salary to Regional Minimum Wages*	[10]
Growth and Learning	*HR Capability:* Training programs and On Job Development to improve HR capabilities or skills	*S4-4*	*Number of Trained Employee/Year*	[17]
Growth and Learning	*Use of Resources:* Effectiveness of the use of human resources	*S4-5*	*Attendance Ratio*	[8]

Model Hierarchy Development
In this section, the researcher compiles a hierarchy of sustainability performance models based on Lean and Green BSC in the cosmetics industry, as shown in FIGURE 3.
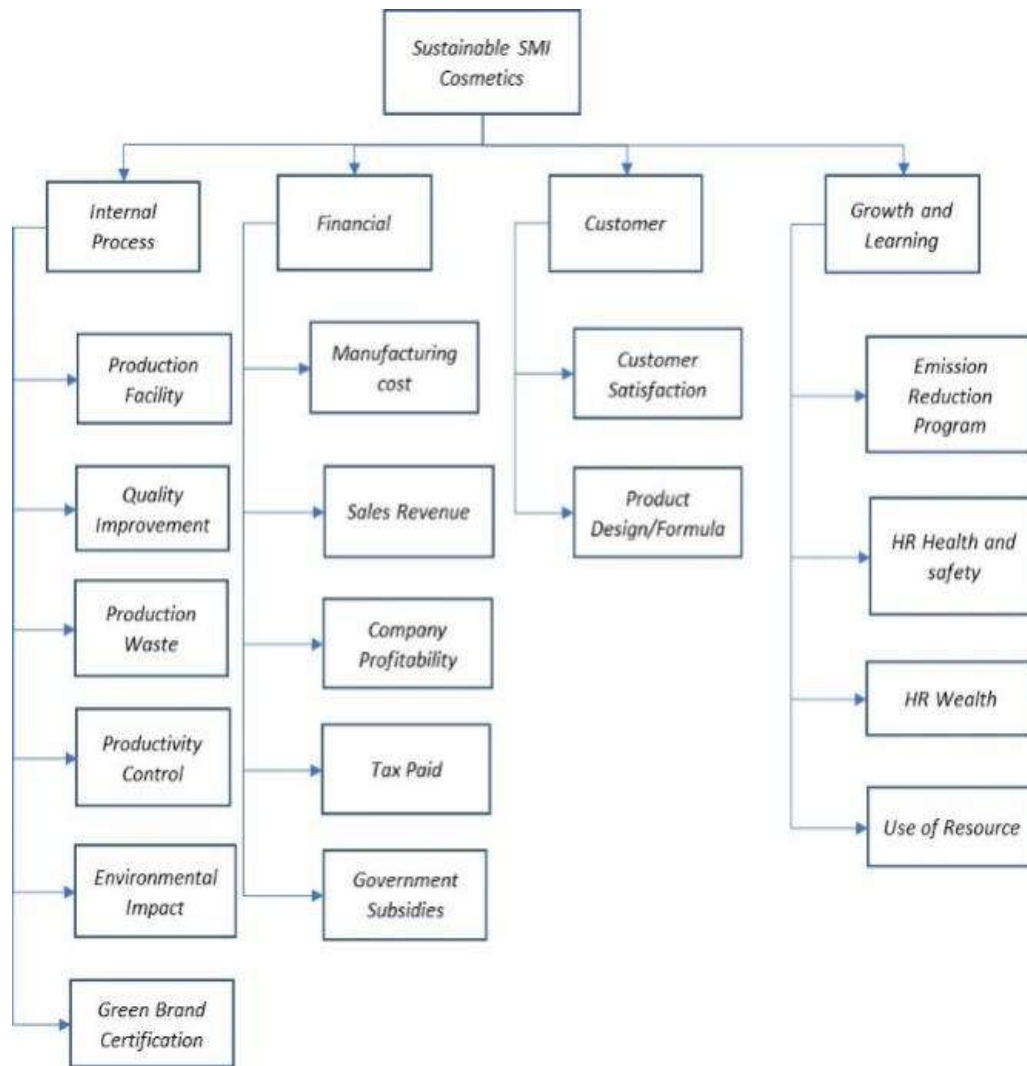
FIGURE 3: Hierarchical Structure of the BSC Lean and Green Performance Model

Weighting Criteria and Sub Criteria
After forming the BSC lean and green strategy model hierarchy, the next step is to decide which criteria will be prioritized to be monitored intensively every month. The method used is the AHP approach, and the tool used to calculate the weight is a questionnaire given to 5 people who are considered experts because they have become representatives of stakeholders. TABLE 2 shows the results of the pairwise comparison calculation of the four BSC lean and green criteria.

The inconsistency ratio of the pairwise comparison in the criteria level was 0.01. It was stated that the weighting was consistent because the number was below 0.10. Based on TABLE 2, financial scorecards are prioritized by companies with a weight of 0.352. The company also has to boost customer aspects, internal processes, and growth and learning in consecutive priority positions to support financial performance criteria. If SMIs can maximize those criteria performance, they will possibly generate optimum results of financial aspects.

At the sub-criteria level, the research team also weighted using the same method as for TABLE 3.

TABLE 2: Pairwise Comparison Calculation Results at Criteria Level

	Financial	*Customer*	*Internal Process*	*Growth and Learning*	*Geometric Mean*	*Relative Weight*
Financial	1.00	1.19	2.05	2.35	1.55	0.352
Customer	0.84	1.00	2,77	2,35	1.53	0.350
Internal Process	0.49	0.36	1.00	1,40	0.70	0.161
Growth and Learning	0.43	0.43	0.72	1.00	0.60	0.137
Total	2.75	2.98	6.53	7.10	4.38	1

TABLE 3: Weighted Calculation Results at Sub Criteria Level

Code	Sub Criteria	Relative Weight to Each Criterion	Absolute Weight to Each Criterion
S3-1	Customer Satisfaction	0,645	0,225
S3-2	Product Design/Formula	0,355	0,124
S2-2	Company Profitability	0,284	0,100
S2-3	Sales Revenue	0,272	0,096
S2-1	Manufacturing Cost	0,194	0,069
S2-5	Tax Paid	0,130	0,046
S2-4	Government Subsidies	0,120	0,043
S4-4	HR Capability	0,280	0,038
S1-4	Environmental Impact	0,230	0,037
S4-2	HR Wealth	0,252	0,035
S4-1	HR Health and Safety	0,237	0,032
S1-5	Production Waste	0,193	0,031
S1-2	Productivity Control	0,179	0,029
S1-1	Quality Improvement	0,154	0,025
S1-3	Green Brand Certification	0,130	0,021
S1-6	Production Facility	0,114	0,018
S4-5	HR Satisfaction	0,130	0,018
S4-3	Emission Reduction Program	0,100	0,014

Customer satisfaction is the ultimate goal from a financial perspective, measured by the low level of customer complaints. The company maintains the presence of its customers by maintaining product quality. The quality of cosmetic products is determined by product formulations guaranteed to be safe and environmentally friendly.

The researchers compiled a strategy map based on brainstorming with experts by referring to the weighting criterion and sub-criteria level. FIGURE 4 depicts a strategy map that can be applied to SMI's cosmetics in the future.
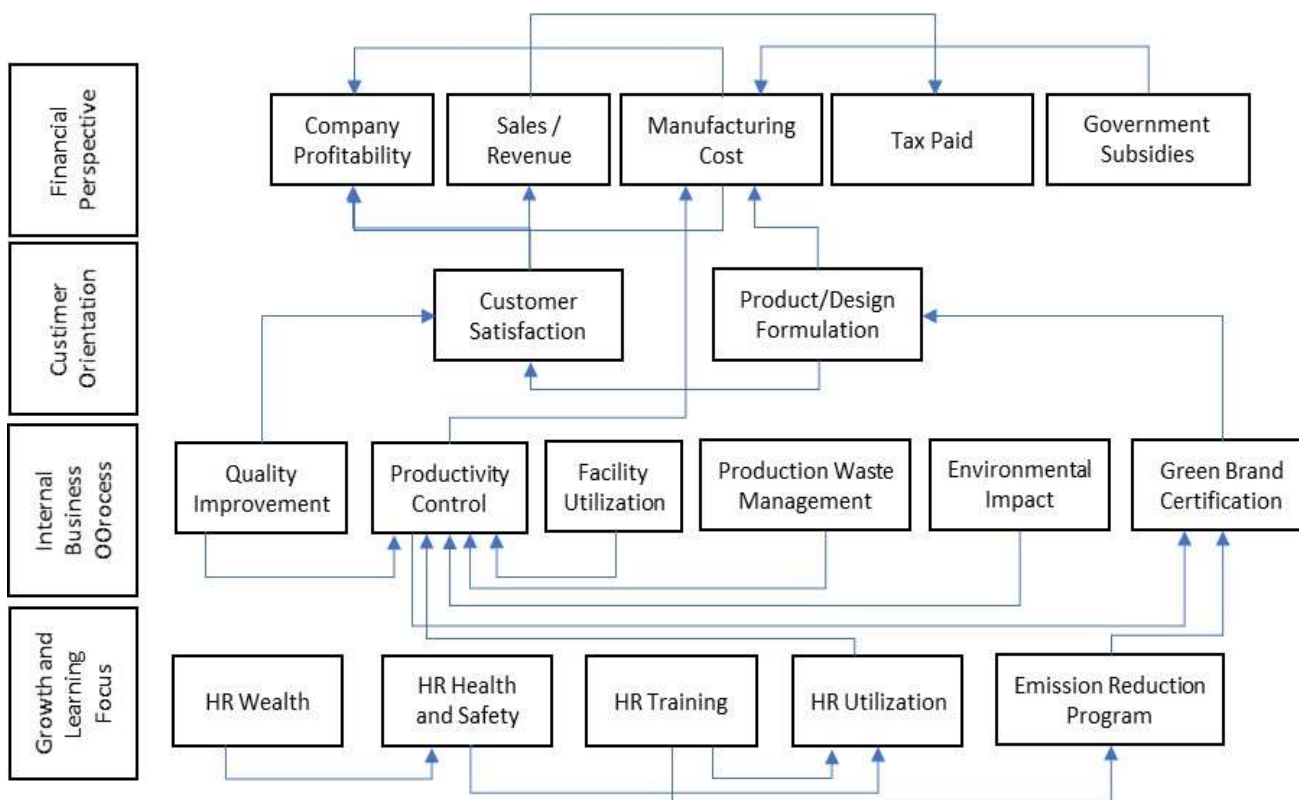

FIGURE 4: The Strategic Mapping of Cosmetics SMI

The researcher proposes four priority strategies to maintain and improve the performance of several indicators with the foremost priority in the short term, namely:

a. Conduct research of new product utilizing natural, halal, and environmentally friendly material formulations to increase sales and environmental performance. Innovations in product formulations can increase customer satisfaction and generate optimum profits.

b. Increase profit stability without increasing product prices by applying kaizen techniques to improve productivity and minimize manufacturing costs. The kaizen techniques scopes are including eight waste minimization both in the production process or environmental impact.

c. Develop e-commerce strategies and customer relationship programs promoting green brand certification. The activities will bring products closer to society and meet customer needs.

d. Health care for workers through environmentally friendly programs, CSR, and collaboration with local health centres for routine health checks.

CONCLUSIONS

The researchers obtained four criteria for a sustainable SMI Cosmetic assessment based on the lean and green BSC based on the literature. From the four assessment criteria, the research team divided them into 18 sustainability strategies with different weights. The internal process criteria have six strategies, the financial criteria consist of five strategies, the customer criteria are divided into two strategies, and the growth and learning criteria develop five strategies. The design and distribution of questionnaires to 5 experts have been carried out to model each criterion and strategy's priority. Financial criteria have the highest priority of 0.352, and a customer satisfaction strategy is the highest priority to implement. The researcher proposes four main strategies to improve the performance of priority indicators. The first is to develop e-commerce strategies and customer relationship programs that bring products closer to society and meet customer needs. The second is to increase profit stability without increasing product prices, namely by applying kaizen techniques to improve quality and minimize manufacturing costs. The third is to formulate new, environmentally friendly materials to increase sales and environmental performance. The fourth is maintaining worker health through environmentally friendly programs, CSR, and cooperation with local health centres for routine health checks. The implementation of an effective strategy will support the achievement of sustainable SMI Cosmetics.

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